

### AMENDMENTS TO THE CLAIMS

**Claim 1 (Withdrawn)** A peritoneal function testing method in which a ratio  $MTAC_{un}/MTAC_c$  calculated using  $MTAC_{un}$  and  $MTAC_c$  is used as an index for a peritoneal function test, where  $MTAC_{un}$  is an overall mass transfer—area coefficient for urea nitrogen and  $MTAC_c$  is an overall mass transfer—area coefficient for creatinine.

**Claim 2 (Withdrawn)** The peritoneal function testing method of Claim 1, wherein the  $MTAC_{un}$  and the  $MTAC_c$  are obtained by computing Pyle-Popovich model.

**Claim 3 (Withdrawn)** The peritoneal function testing method of Claim 1, wherein a permeability coefficient for cell pores ( $L_P S_C$ ) and an overall permeability coefficient ( $L_P S$ ) are further calculated from Three-Pore Theory model while a ratio  $L_P S_C/L_P S$  calculated using the  $L_P S_C$  and the  $L_P S$  is obtained, and the  $L_P S_C/L_P S$  ratio and the  $MTAC_{un}/MTAC_c$  ratio are used as indexes for the peritoneal function test.

**Claim 4 (Withdrawn)** The peritoneal function testing method of Claim 3, wherein a correlation between the  $L_P S_C/L_P S$  ratio and the  $MTAC_{un}/MTAC_c$  ratio is used as an index for the peritoneal function test.

**Claim 5 (Withdrawn)** The peritoneal function testing method of Claim 1, wherein the  $MTAC_{un}/MTAC_c$  ratio and a volume of water removal are used as indexes for the peritoneal function test.

**Claim 6 (Currently Amended)** A peritoneal function testing method comprising:

a 1st computation step ~~for of obtaining data of a dialysis patient using a computation unit and obtaining individual initial estimate values for (i)  $MTAC_{glc}$ ,  $MTAC_{un}$ , and  $MTAC_c$  by using the obtained data and a processor of the computation unit to compute a computing Pyle-Popovich model, as well as for, and (ii) a ratio  $L_P S_C / L_P S$  ratio by using  $L_P S_C$  and  $L_P S$ , where  $MTAC_{glc}$  is an overall mass transfer-area-transfer—area coefficient for glucose,  $MTAC_{un}$  is an overall mass transfer-area-transfer—area coefficient for urea nitrogen,  $MTAC_c$  is an overall mass transfer-area-transfer—area coefficient for creatinine,  $L_P S_C$  is a permeability coefficient for cell pores, and  $L_P S$  is an overall permeability coefficient; and~~

a 2nd computation step, following the 1st computation step, ~~of using the computation unit to (i) obtain computation results by computing a in which~~ Three-Pore Theory model is ~~computed using by introducing~~ the individual initial estimate values for the  $MTAC_{glc}$ , the  $MTAC_{un}$ , the  $MTAC_c$ , and the  $L_P S_C / L_P S$  ratio ~~obtained by the 1st computation step thereto, and (ii) calculate~~ an optimal solution of ~~the computation results obtained by from computing~~ the Three-Pore Theory model, ~~the optimal solution being calculated is calculated~~ using a Genetic Algorithm, ~~wherein; and~~

~~using a ratio  $MTAC_{un} / MTAC_c$  ratio, which is calculated by using an optimal  $MTAC_{un}$  and an optimal  $MTAC_c$  determined using by the optimal solution, is used as an index for a peritoneal function test.~~

**Claim 7 (Currently Amended)** The peritoneal function testing method of Claim 6, wherein

in the 1st computation step including the computing of the Pyle-Popovich model, solute concentration values for the glucose, the urea nitrogen, and the creatinine are individually calculated as approximation solutions of linear differential equations.

**Claim 8 (Previously Presented)** The peritoneal function testing method of Claim 7, wherein the  $MTAC_{un}/MTAC_c$  ratio and a volume of water removal are used as indexes for the peritoneal function test.

**Claim 9 (Previously Presented)** The peritoneal function testing method of Claim 8, wherein a correlation between the  $MTAC_{un}/MTAC_c$  ratio and the volume of water removal is used as an index for the peritoneal function test.

**Claim 10 (Withdrawn)** A peritoneal function testing method using Three-Pore Theory model, wherein a permeability coefficient for cell pores ( $L_P S_C$ ) and an overall permeability coefficient ( $L_P S$ ) are calculated while a ratio  $L_P S_C/L_P S$  calculated using the  $L_P S_C$  and the  $L_P S$  is obtained, and the  $L_P S_C/L_P S$  ratio is used as an index for a peritoneal function test.

**Claim 11 (Withdrawn)** The peritoneal function testing method of Claim 10, wherein the  $L_P S_C/L_P S$  ratio and a volume of water removal are used as indexes for the peritoneal function test.

**Claim 12 (Withdrawn)** The peritoneal function testing method of Claim 11, wherein

a correlation between the  $L_P S_C / L_P S$  ratio and the volume of water removal is used as an index for the peritoneal function test.

**Claim 13 (Withdrawn)** A peritoneal dialysis planning apparatus comprising a computation unit that performs computation using data obtained from a dialysis patient and outputs results of the computation to an output unit, characterized by:

the computation unit calculates a ratio  $MTAC_{un}/MTAC_c$  by using  $MTAC_{un}$  and  $MTAC_c$ , where  $MTAC_{un}$  is an overall mass transfer—area coefficient for urea nitrogen and  $MTAC_c$  is an overall mass transfer—area coefficient for creatinine; and

the output unit outputs the  $MTAC_{un}/MTAC_c$  ratio as an index for a peritoneal function test.

**Claim 14 (Withdrawn)** The peritoneal dialysis planning apparatus of Claim 13, wherein the computation unit obtains the  $MTAC_{un}$  and the  $MTAC_c$  by computing Pyle-Popovich model.

**Claim 15 (Withdrawn)** The peritoneal dialysis planning apparatus of Claim 14, wherein the computation unit further (i) calculates a permeability coefficient for cell pores ( $L_P S_C$ ) and an overall permeability coefficient ( $L_P S$ ) from Three-Pore Theory model, and also obtains a ratio  $L_P S_C / L_P S$ , and

(ii) makes a graph of a correlation between the  $L_P S_C / L_P S$  ratio and the  $MTAC_{un}/MTAC_c$  ratio, which is output to the output unit.

**Claim 16 (Withdrawn)** The peritoneal dialysis planning apparatus of Claim 15, wherein  
the output unit is a display unit, and  
the display unit outputs the correlation by displaying a distribution of plotted actual  
measurements of multiple patients and a regression line for the distribution.

**Claim 17 (Withdrawn)** The peritoneal dialysis planning apparatus of Claim 13, wherein  
a correlation between the  $MTAC_{ur}/MTAC_c$  ratio and a volume of water removal is further  
presented in a graph, which is output to the output unit.

**Claim 18 (Currently Amended)** A peritoneal dialysis planning apparatus comprising a  
computation unit that performs computation using data obtained from a dialysis patient and  
outputs results of the computation to an output unit, characterized by:

\_\_\_\_\_ a processor;

\_\_\_\_\_ a memory;

~~the~~ a computation unit operable to (i) obtain data of a dialysis patient and store the  
obtained data in the memory, obtains, (ii) obtain individual initial estimate values for  $MTAC_{glc}$ ,  
 $MTAC_{ur}$ , and  $MTAC_c$  by using the obtained data and the processor to compute a computing Pyle-  
Popovich model, as well as for and for a ratio  $L_P S_C / L_P S$  ratio by using  $L_P S_C$  and  $L_P S$ , where  
 $MTAC_{glc}$  is an overall mass transfer-area-transfer-area coefficient for glucose,  $MTAC_{ur}$  is an  
overall mass transfer-area-transfer-area coefficient for urea nitrogen,  $MTAC_c$  is an overall mass  
transfer-area-transfer-area coefficient for creatinine,  $L_P S_C$  is a permeability coefficient for cell  
pores, and  $L_P S$  is an overall permeability coefficient, then (ii) performs (iii) obtain computation

results by computing a Three-Pore Theory model using the processor and computation by introducing the individual initial estimate values for the  $MTAC_{glc}$ , the  $MTAC_{ure}$ , the  $MTAC_c$ , and the  $L_P S_C / L_P S$  ratio into Three-Pore Theory model, (iii) calculates, (iv) calculate, using the processor and a Genetic Algorithm, an optimal solution of the computation results obtained by computing from the Three-Pore Theory model by using Genetic Algorithm, and furthermore (iv) calculates, and (v) calculate a ratio  $MTAC_{ure}/MTAC_c$  ratio by using the processor, an optimal  $MTAC_{ure}$  determined using the optimal solution and an optimal  $MTAC_c$  determined using by the optimal solution; and

the an output unit operable to output outputs the  $MTAC_{ure}/MTAC_c$  ratio as an index for a peritoneal function test.

**Claim 19 (Currently Amended)** The peritoneal dialysis planning apparatus of Claim 18, wherein

during the computation of the Pyle-Popovich model, the computation unit calculates individual solute concentration values for the glucose, the urea nitrogen, and the creatinine, as approximation solutions of linear differential equations.

**Claim 20 (Currently Amended)** The peritoneal dialysis planning apparatus of Claim 18, wherein

a correlation between a ratio (i) the  $MTAC_{ure}/MTAC_c$  ratio calculated using the optimal  $MTAC_{ure}$  and the optimal  $MTAC_c$  and (ii) a volume of water removal, is further presented in a graph, which that is output to the output unit.

**Claim 21 (Currently Amended)** The peritoneal dialysis planning apparatus of Claim 20, wherein

wherein the output unit is a display unit, and

wherein the display unit outputs the correlation by displaying a distribution of plotted actual measurements of multiple patients and a regression line for the distribution.

**Claim 22 (Currently Amended)** The peritoneal dialysis planning apparatus of Claim 18, wherein

the output unit outputs one of the  $MTAC_{un}/MTAC_e$  ratio calculated using the optimal solution and ~~an~~ the  $L_P S_C/L_P S$  ratio calculated using ~~of~~ the optimal solution, which is plotted in a two axis ~~two axes~~ coordinate system together with a volume of water removal.

**Claim 23 (Withdrawn)** A peritoneal dialysis planning apparatus comprising a computation unit that computes Three-Pore Theory model using data obtained from a dialysis patient and outputs results of the computation to an output unit, characterized by:

the computation unit obtains a permeability coefficient for cell pores ( $L_P S_C$ ) and an overall permeability coefficient ( $L_P S$ ) as a result of the computation of the Three-Pore Theory model, and also obtains a ratio  $L_P S_C/L_P S$ ; and

the output unit outputs the  $L_P S_C/L_P S$  ratio as an index of a peritoneal function test.

**Claim 24 (Withdrawn)** The peritoneal dialysis planning apparatus of Claim 23, wherein

a correlation between the  $L_P S_C / L_P S$  ratio and a volume of water removal is further presented in a graph, which is output to the output unit.

**Claim 25 (Withdrawn)** The peritoneal dialysis planning apparatus of Claim 23, wherein the output unit outputs one of an  $MTAC_{un}/MTAC_c$  ratio obtained by the computation unit and the  $L_P S_C / L_P S$  ratio, which is plotted in a two-axes coordinate system together with a volume of water removal.

**Claim 26 (Withdrawn)** The peritoneal dialysis planning apparatus of Claim 25, wherein when outputting one of the  $MTAC_{un}/MTAC_c$  ratio and the  $L_P S_C / L_P S$  ratio, the output unit further presents, in the coordinate system, information indicating a peritoneal function state obtained according to the volume of water removal.

**Claim 27 (Withdrawn)** The peritoneal dialysis planning apparatus of Claim 26, wherein the output unit is a display unit, and the display unit outputs a correlation between the  $L_P S_C / L_P S$  ratio and a volume of water removal by displaying a distribution of plotted actual measurements of multiple patients and a regression line for the distribution.

**Claim 28 (Withdrawn)** A computer-readable recording medium having a peritoneal function testing program recorded thereon, wherein the peritoneal function testing program executes an  $MTAC_{un}/MTAC_c$  calculation step in which a ratio  $MTAC_{un}/MTAC_c$  is calculated using  $MTAC_{un}$  and  $MTAC_c$  so as to be used as an



index for a peritoneal function test, where  $MTAC_{un}$  is an overall mass transfer—area coefficient for urea nitrogen and  $MTAC_c$  is an overall mass transfer—area coefficient for creatinine.

**Claim 29 (Withdrawn)** The computer-readable recording medium of Claim 28, wherein the peritoneal function testing program further executes an  $MTAC$  calculation step in which the  $MTAC_{un}$  and the  $MTAC_c$  are obtained by computing Pyle-Popovich model.

**Claim 30 (Withdrawn)** The computer-readable recording medium of Claim 28, wherein the peritoneal function testing program further (i) comprises an  $L_P S_C / L_P S$  calculation step in which a permeability coefficient for cell pores ( $L_P S_C$ ) and an overall permeability coefficient ( $L_P S$ ) are calculated from Three-Pore Theory model while a ratio  $L_P S_C / L_P S$  calculated using the  $L_P S_C$  and the  $L_P S$  is obtained, and (ii) executes use of the  $L_P S_C / L_P S$  ratio and a volume of water removal as indexes for the peritoneal function test.

**Claim 31 (Withdrawn)** The computer-readable recording medium of Claim 28, wherein the peritoneal function testing program further executes use of the  $MTAC_{un} / MTAC_c$  ratio and a volume of water removal as indexes for the peritoneal function test.

**Claim 32 (Currently Amended)** A computer-readable recording medium having a peritoneal function testing program recorded thereon, the peritoneal function testing program causing a computer to execute a peritoneal function testing method comprising: wherein  
~~the peritoneal function testing program comprises:~~

a 1st computation step ~~for of obtaining data of a dialysis patient using a computation unit and~~ obtaining individual initial estimate values for (i)  $MTAC_{glc}$ ,  $MTAC_{un}$ , and  $MTAC_c$  by using the obtained data and a processor of the computation unit to compute a ~~computing~~ Pyle-Popovich model, as well as for, and (ii) a ~~ratio~~  $L_P S_C / L_P S$  ratio by using  $L_P S_C$  and  $L_P S$ , where  $MTAC_{glc}$  is an overall mass ~~transfer-area-transfer—area~~ coefficient for glucose,  $MTAC_{un}$  is an overall mass ~~transfer-area-transfer—area~~ coefficient for urea nitrogen,  $MTAC_c$  is an overall mass ~~transfer-area-transfer—area~~ coefficient for creatinine,  $L_P S_C$  is a permeability coefficient for cell pores, and ~~the~~  $L_P S$  is an overall permeability coefficient; ~~and~~

a 2nd computation step, following the 1st computation step, ~~of using the computation unit to~~ (i) obtain computation results by ~~computing a in which~~ Three-Pore Theory model is ~~computed by introducing using~~ the individual initial estimate values for the  $MTAC_{glc}$ , the  $MTAC_{un}$ , the  $MTAC_c$ , and the  $L_P S_C / L_P S$  ratio ~~obtained by the 1st computation step thereto~~, and (ii) ~~calculate~~ an optimal solution of ~~the computation results obtained by from computing~~ the Three-Pore Theory model, ~~the optimal solution being calculated is calculated~~ using a Genetic Algorithm, ~~wherein; and~~

~~using use of a ratio~~  $MTAC_{un} / MTAC_c$  ratio, which is calculated using an optimal  $MTAC_{un}$  and an optimal  $MTAC_c$  determined ~~using by~~ the optimal solution, as an index for a peritoneal function test ~~is executed~~.

**Claim 33(Currently Amended)**      The computer-readable recording medium of Claim 32, wherein

the peritoneal function testing method ~~includes program executes, in, during the 1st computation step including the computing the computation~~ of the Pyle-Popovich model,

~~calculating~~-calculation of individual solute concentration values for the glucose, the urea nitrogen, and the creatinine, as approximation solutions of linear differential equations.

**Claim 34 (Currently Amended)** The computer-readable recording medium of Claim 32, wherein

the peritoneal function testing method includes ~~program further executes use of using~~ the  $MTAC_{un}/MTAC_c$  ratio and a volume of water removal as indexes for the peritoneal function test.

**Claim 35 (Withdrawn)** A computer-readable recording medium on which a peritoneal function testing program using Three-Pore Theory model is recorded, wherein the peritoneal function testing program (i) comprises:  
a permeability-coefficient calculation step for calculating a permeability coefficient for cell pores ( $L_P S_C$ ) and an overall permeability coefficient ( $L_P S$ ); and  
an  $L_P S_C/L_P S$  calculation step for calculating a ratio  $L_P S_C/L_P S$ , and  
(ii) executes use of the  $L_P S_C/L_P S$  ratio as an index for a peritoneal function test.

**Claim 36 (Withdrawn)** The computer-readable recording medium of Claim 35, wherein the peritoneal function testing program further executes use of the  $L_P S_C/L_P S$  ratio and a volume of water removal as indexes for the peritoneal function test.

**Claim 37 (Withdrawn)** A peritoneal function testing program for executing an  $MTAC_{un}/MTAC_c$  calculation step in which a ratio  $MTAC_{un}/MTAC_c$  is calculated using  $MTAC_{un}$  and

$MTAC_c$  so as to be used as an index for a peritoneal function test, where  $MTAC_{un}$  is an overall mass transfer—area coefficient for urea nitrogen and  $MTAC_c$  is an overall mass transfer—area coefficient for creatinine.

**Claim 38 (Withdrawn)** The peritoneal function testing program of Claim 37, further executing an  $MTAC$  calculation step in which the  $MTAC_{un}$  and the  $MTAC_c$  are obtained by computing Pyle-Popovich model.

**Claim 39 (Withdrawn)** The peritoneal function testing program of Claim 37, further comprising:

an  $L_P S_C / L_P S$  calculation step in which a permeability coefficient for cell pores ( $L_P S_C$ ) and an overall permeability coefficient ( $L_P S$ ) are calculated from Three-Pore Theory model while a ratio  $L_P S_C / L_P S$  calculated using the  $L_P S_C$  and the  $L_P S$  is obtained, wherein

use of the  $L_P S_C / L_P S$  ratio and a volume of water removal as indexes for the peritoneal function test is executed.

**Claim 40 (Withdrawn)** The peritoneal function testing program of Claim 37, further executing use of the  $MTAC_{un} / MTAC_c$  ratio and a volume of water removal as indexes for the peritoneal function test.

**Claims 41-43 (Cancelled)**

**Claim 44 (Withdrawn)** A peritoneal function testing program using Three-Pore Theory model, (i) comprising:

a permeability-coefficient calculation step for calculating a permeability coefficient for cell pores ( $L_P S_C$ ) and an overall permeability coefficient ( $L_P S$ ); and

an  $L_P S_C / L_P S$  calculation step for calculating a ratio  $L_P S_C / L_P S$ , and

(ii) executing use of the  $L_P S_C / L_P S$  ratio as an index for a peritoneal function test.

**Claim 45 (Withdrawn)** The peritoneal function testing program of Claim 44, executing use of the  $L_P S_C / L_P S$  ratio and a volume of water removal as indexes for the peritoneal function test.